

# HALLIBURTON

iCem<sup>®</sup> Service

**ENCANA OIL & GAS (USA) INC. - EBUS**

**For:**

Date: Friday, December 26, 2014

**RUHL 1F-32H-B264 901962821**

Case 1

Sincerely, JOSEPH ROMERO AND CREW

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**1.1 Executive Summary**

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Halliburton appreciates the opportunity to perform the cementing services on the **Well Name and Number** cement **Job Type** casing job. A pre-job safety meeting was held before the job where details of the job were discussed, potential safety hazards were reviewed, and environmental compliance procedures were outlined.

Halliburton maintains a continuous quality improvement process and appreciates any comments or suggestions that you may have. Halliburton again thanks you for the opportunity to perform service work on this well. We hope to be your solutions provider for future projects.

Respectfully,

**Halliburton Brighton**

**Job Times**

	<b>Date</b>	<b>Time</b>	<b>Time Zone</b>
<b>Called Out</b>			MST
<b>On Location</b>			MST
<b>Job Started</b>			MST
<b>Job Completed</b>			MST
<b>Departed Location</b>			MST

**1.2** Cementing Job Summary

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**1.3 Planned Pumping Schedule**

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- 1. Fill Lines with Water**
  - a. Density = 8.33ppg
  - b. Volume = 2bbl
- 2. Pressure Test Lines to Xpsi**
- 3. Pump X Spacer**
  - a. Density = X lb/gal
  - b. Volume = X bbl
  - c. Rate = X bpm
- 4. Drop Bottom Plug**
- 5. Pump X (Lead)**
  - a. Density = X
  - b. Yield = X
  - c. Water Requirement = X
  - d. Volume = X sks (X bbls)
  - e. Rate = X bpm
- 6. Pump X (Tail)**
  - a. Density = X
  - b. Yield = X
  - c. Water Requirement = X
  - d. Volume = X sks (X bbls)
  - e. Rate = X bpm
- 7. Drop Top Plug**
- 8. Start Displacement**
- 9. Pump Displacement Water**
  - a. Density = X lb/gal
  - b. Volume = X bbls
  - c. Rate = X bpm
10. Land Plug – Anticipated Final Circulation Pressure X psi

**Calculated Total Displacement = X bbls**

## 1.4 Job Overview

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		Units	Description
1	Surface temperature at time of job	°F	
2	Mud type (OBM, WBM, SBM, Water, Brine)	-	
3	Actual mud density	lb/gal	
4	Time circulated before job	HH:MM	
5	Mud volume circulated	Bbls	
6	Rate at which well was circulated	Bpm	
7	Pipe movement during hole circulation	Y/N	
8	Rig pressure while circulating	Psi	
9	Time from end mud circulation to start of job	HH:MM	
10	Pipe movement during cementing	Y/N	
11	Calculated displacement	Bbls	
12	Job displaced by	Rig/HES	
13	Annular before job)?	Y/N	
14	Annular flow after job	Y/N	
15	Length of rat hole	Ft	
16	Units of gas detected while circulating	Units	
17	Was lost circulation experienced at any time ?	Y/N	

## 1.5 Water Field Test

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Item	Recorded Test Value	Units	Max. Acceptable Limit	Potential Problems in Exceeding Limit
pH		----	6.0 - 8.0	Chemicals in the water can cause severe retardation
Chlorides		ppm	3000 ppm	Can shorten thickening time of cement
Sulfates		ppm	1500 ppm	Will greatly decrease the strength of cement
Total Hardness		ppm	500 mg/L	High concentrations will accelerate the set of the cement
Calcium		ppm	500 ppm	High concentrations will accelerate the set of the cement
Total Alkalinity		ppm	1000 ppm	Cement is greatly retarded to the point where it may not set up at all (typically occurs @ pH ≥ 8.3).
Bicarbonates		ppm	1000 ppm	Cement is greatly retarded to the point where it may not set up at all
Potassium		ppm	5000 ppm	High concentrations will shorten the pump time of cement (indicates the presence of chlorides, therefore if Potassium levels are measured as high, so should the chlorides)
Iron		ppm	300 ppm	High concentrations will accelerate the set of the cement
Temperature		°F	50-80 °F	High temps will accelerate; Low temps may risk freezing in cold weather

**Submitted Respectfully by:** \_\_\_\_\_

## 1.6 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Comb Pump Rate (bbl/min)	PS Pump Press (psi)	DH Density (ppg)	Comment
Event	1	Call Out	Call Out	12/25/2014	14:00:00	USER				
Event	2	Depart Yard Safety Meeting	Depart Yard	12/25/2014	17:30:00	USER				
Event	3	Arrive At Loc	Arrive At Loc	12/25/2014	18:00:00	USER				RIG WAS STILL RUNING CASING HAD ABOUT 2700FT TO RUN
Event	4	Rig-up Lines	Rig-up Lines	12/25/2014	23:15:00	USER				HELD JSA WITH CREW
Event	5	Safety Meeting	Safety Meeting	12/26/2014	01:00:00	USER	0.00	1.00	-0.06	HELD A JSA WITH ALL INVOLVED PERSONAL. HAD SEVERAL FROZEN VALVE THAT NEED TO BE THAWED BEFORE WE WERE ABLE TO START THE JOB.
Event	6	Start Job	Start Job	12/26/2014	02:36:09	COM4	0.00	18.00	8.29	
Event	7	Test Lines	Test Lines	12/26/2014	02:40:21	COM4	0.00	2547.00	8.34	TESTED LINE TO 4527PSI AND HELD FOR 2MIN WITH NO VISABLE LEAKS
Event	8	Pump Spacer 1	Pump Spacer 1	12/26/2014	02:55:17	COM4	0.50	63.00	9.31	PUMPED 30BBLS OF 12.5PPG TUNED SPACER AT 2.5BPM WITH 160PSI.
Event	9	Pump Lead Cement	Pump Lead Cement	12/26/2014	03:07:53	COM4	1.40	8.00	13.05	PUMPED 106BBLS OR 355SKS OF 13.8PPG EXPANDACEM AT 7BPM WITH 750PSI.
Event	10	Shutdown	Shutdown	12/26/2014	03:23:33	USER	2.60	75.00	1.04	
Event	11	Clean Lines	Clean Lines	12/26/2014	03:26:00	USER	0.00	-70.00	8.40	SWITCHED OVER MANIFOLD AND WASHED OUT LINES
Event	12	Drop Plug	Drop Plug	12/26/2014	03:35:52	USER	2.60	-25.00	7.99	DART DROPPED BY THRID PARTY AND COMPANY REP
Event	13	Pump Displacement	Pump MMCR WATER	12/26/2014	03:37:00	USER	0.00	-72.00	-0.48	PUMPED .25BBLS OF MMCR WATER

Event	14	Drop Ball	Drop Ball	12/26/2014	03:38:08	USER	0.00	-76.00	-0.65	BALL DROPPED BY THRID PARTY AND COMPANY REP
Event	15	Pump Displacement	Pump Displacement	12/26/2014	03:39:24	COM4	6.10	56.00	7.87	PUMPED 10BBLS OF MMCR WATER AND 166BBLS OF FRESH WATER AT 6BPM WITH 1718PSI. SLOWED RATE TO KEEP PRESSURE DOWN AND BUMP THE PLUG
Event	16	Bump Plug	Bump Plug	12/26/2014	04:14:17	USER	2.90	1645.00	7.64	BUMPED PLUG AT 1720PSI AND BROUGHT PRESSURE UP TO 2522 FOR CASING TEST.
Event	17	Pressure Up Well	Pressure Up Well	12/26/2014	04:17:03	USER	0.00	2536.00	7.68	HELD 2522PSI FOR 5MIN RELEASED PRESSURE AT 2656PSI TO CHECK FLOATS.
Event	18	Check Floats	Check Floats	12/26/2014	04:22:12	USER	0.00	2260.00	7.69	FLOATS HELD
Event	19	End Job	End Job	12/26/2014	04:23:02	USER	0.00	-52.00	7.55	